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BASELINE
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MARSHALL WORK INSTRUCTION

AD01

WASTEWATER COMPLIANCE

DOCUMENT HISTORY LOG

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1. PURPOSE

This Marshall Work Instruction (MWI) establishes the method for wastewater compliance activities at Marshall Space Flight Center (MSFC). This MWI provides instructions for the requirements provided in Marshall Procedures and Guidelines (MPG) 8500.1, "MSFC Environmental Management Program," specifically the wastewater compliance requirements as established by the Clean Water Act, the U.S. Environmental Protection Agency (EPA), and State water quality requirements. This MWI includes guidance for routing new and existing liquid discharges generated at MSFC to the appropriate destination.

2. APPLICABILITY

This MWI applies to MSFC employees, contractors, and subcontractors (including leased facilities) that contribute to MSFC wastewater discharges.

3. APPLICABLE DOCUMENTS

3.1 MPG 8500.1, "MSFC Environmental Management Program"

3.2 MWI 8550.2, "Storm Water Management"

3.3 MWI 8550.1, "Waste Management"

3.4 AD10-OWI-001, "Consolidated Environmental Response Plan (CERP)"

4. REFERENCES

4.1 40 Code of Federal Regulations (CFR) 401 to 471, "National Categorical Pretreatment Standards"

4.2 Alabama Department of Environmental Management (ADEM) National Pollutant Discharge Elimination System (NPDES) Permit No. AL0000221

4.3 ADEM State Industrial Discharge (SID) Permit No. IU 08 45 00027

5. DEFINITIONS

5.1 Blowdown. Periodic flow from cooling towers or boilers that is required to maintain proper water quality within the tower or boiler. Generally, blowdown occurs when the conductivity of the cooler water is higher than the desired range for the system.

5.2 DI. De-ionized water.

5.3 Discharge. Continuous or intermittent flow stream that requires disposal (examples: storm water, sanitary sewage, cooling water, etc.).

5.4 Discharge Monitoring Reports (DMR). The form for reporting monitoring data to EPA or a State regulatory agency.

5.5 GWTF. Groundwater Treatment Facility, located in the West Test Area.

5.6 Industrial Sewer. The system of pipes designed to convey industrial wastes to the former industrial treatment system. Currently, wastewaters conveyed by the industrial sewer receive no treatment, and they discharge into a tributary of Indian Creek. Some of the industrial flows from Buildings 4760 and 4705 have been routed to the Industrial Wastewater Treatment Facility (IWTF) at the Center through lined double-walled pipe.

5.7 IWTF. Industrial Wastewater Treatment Facility (Bldg 4761)

5.8 National Pollutant Discharge Elimination System (NPDES) Permit. Alabama Department of Environmental Management (ADEM) issues to MSFC the NPDES Permit No. AL0000221, which allows specified discharges to Indian Creek, Huntsville Spring Branch, and an unnamed tributary to Wheeler Lake as described in the permit.

5.9 Non-Storm Water Discharge. Any discharge connected to the storm sewer that is not storm water.

5.10 OWS. Oil/water separator.

5.11 RCRA. Resource Conservation and Recovery Act.

5.12 Remediated Groundwater. Groundwater that is cleaned within limits for specified chemical contaminants.

5.13 Sanitary Sewer. The system of pipes and pumps designed to convey domestic wastes to the Redstone Wastewater Treatment Plant.

5.14 Storm Sewer. The system of pipes, ditches, channels, and natural streams used to convey storm water.

5.15 Surface Water. The system of naturally occurring streams and wetlands.

5.16 State Industrial Discharge Permit. ADEM issues to MSFC the State Industrial Discharge Permit No. IU 08 45 00027, which regulates industrial wastewater discharge, including discharges from cyanide plating operations, metal finishing operations, paint booth operations, photo processing, and other miscellaneous low volume or otherwise insignificant wastewaters, to the Redstone Arsenal Central Wastewater Treatment Plant.

5.17 Wastewater. Any discharge to the sanitary sewer or industrial sewer.

6. INSTRUCTIONS

State and Federal laws mandate that storm sewers only convey storm water and permitted non-storm water discharges. Under these requirements, MSFC must locate and permit or remove all non-storm water discharges from the storm sewer and the industrial sewer. MSFC must also implement a system that prevents future discharges from being routed incorrectly. Because the industrial sewer is no longer treated before it discharges to surface water, it should be considered as part of the storm sewer system for regulatory purposes. Therefore, non-storm water discharges to the industrial sewer must be removed and routed to the sanitary sewer.

Redstone Arsenal owns and operates the sanitary sewer collection system at MSFC; therefore, the U.S. Army is responsible for complying with regulations regarding the sanitary sewer collection system. MSFC is not allowed to discharge wastes that violate standard sanitary sewer pretreatment requirements. Redstone Arsenal does not have formalized pretreatment requirements. Therefore, the EPA National Categorical Pretreatment Standards (40 CFR 401 to 471) must be used for guidance.

6.1 Compliance with State Industrial Discharge (SID) Permit.

6.1.1 MSFC user organizations shall notify the Environmental Engineering Department (EED) of changes to and/or new wastewater processes that discharge to the sanitary sewer prior to implementation.

6.1.2 MSFC user organizations shall contact EED for a modification for any discharges sent to the IWTF.

6.1.3 MSFC user organizations shall transport or arrange for transport of industrial discharges to the IWTF for treatment and

disposal. (The existing conveyance system to the IWTF serves only Buildings 4760 and 4705.)

6.1.4 EED shall ensure that all wastewater sources of discharge to the sanitary sewer and/or the industrial sewer are in compliance with the SID Permit. If new or changed wastewater discharges are reported, EED shall obtain appropriate permits if required.

6.1.5 The EED must approve all new discharges to the IWTF. This policy helps the EED ensure that the SID permit is current.

6.1.6 MSFC user organizations shall not increase the use of process water or attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the SID permit.

6.1.7 EED shall implement and maintain the Spill Prevention Control and Countermeasure (SPCC) Plan as described in the AD10-OWI-001, "Consolidated Environmental Response Plan (CERP)."

6.2 Compliance with National Pollutant Discharge Elimination System (NPDES) Permit.

6.2.1 MSFC user organizations shall notify EED of new, moved or changed sources that may potentially affect surface drainage. The types of sources include above ground tanks, underground tanks, hazardous waste storage, hazardous material storage, storage yards, construction sites, sandblasting areas, materials handling/fueling areas, equipment parking and maintenance areas, vehicle and equipment washing, buried pipelines and garbage dumpsters. MSFC user organizations shall maintain these areas in accordance with MWI 8550.2, "Storm Water Management."

6.2.2 EED shall ensure that all sources of wastewater discharges to the sanitary sewer and/or the industrial sewer are in compliance with the NPDES Permit. If new or changed wastewater discharges are reported, EED shall obtain appropriate permits if required.

6.2.3 MSFC user organizations shall not increase the use of process water or attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the NPDES permit.

6.2.4 EED shall implement, and maintain the Stormwater Best Management Practices (BMP) as described in the MWI 8550.2, "Storm Water Compliance" and AD10-OWI-001, CERP.

6.3 MSFC Sewer Management Guidance.

The responsibility for making proper sewer connections rests with the designer of the connection and the contractor who implements the connection. EED provides guidance to the designers regarding the proper connection procedures. Redstone Arsenal is responsible for the approval and acceptance of discharges to the sanitary sewer system.

6.3.1 Allowable Discharge Routing. The following are the preferred and allowable routing for the typical categories of discharges at MSFC. If the discharge does not fall into one of the categories listed below, EED must be consulted to determine the correct sewer connection. For deviations to allowable discharge routings, MSFC user organizations must submit a written memorandum to EED and obtain approval prior to implementation.

6.3.2 Cooling Tower Blowdown.

6.3.2.1 Discharge cooling tower blowdown to the sanitary sewer.

6.3.2.2 Discharge cooling tower blowdown to the storm sewer if the discharge meets the NPDES permit conditions. EED must be consulted.

6.3.2.3 Obtain EED approval for all additives used in cooling towers.

6.3.2.4 Notify EED at least 60 days before a change in additives takes place if the cooling tower discharges to the storm sewer.

6.3.3 Boiler Blowdown

6.3.3.1 Discharge boiler blowdown to the sanitary sewer.

6.3.3.2 Discharge boiler blowdown to the storm sewer if the discharge is permitted by the MSFC NPDES permit. EED must be consulted.

6.3.3.3 Obtain EED approval for all additives used in boilers.

6.3.3.4 Notify EED at least 60 days before a change in additives takes place if the boiler blowdown discharges to the storm sewer.

6.3.4 Once-through Non-contact Cooling Water.

6.3.4.1 Discharge once-through non-contact cooling water to the storm sewer, if possible, to avoid hydraulic overloading in the sanitary sewer.

6.3.4.2 Discharge once-through non-contact cooling water to the sanitary sewer if necessary.

6.3.5 Laboratory Sinks.

6.3.5.1 Route discharges from laboratory sinks to the sanitary sewer.

6.3.5.2 Route laboratory sink discharges to the IWTF if a collection system is available in the vicinity of the discharge.

6.3.6 Floor Drains.

6.3.6.1 Route floor drains to the sanitary sewer.

6.3.6.2 Route floor drains to the IWTF if a collection system is available in the vicinity.

6.3.7 Photographic Processing Wastewater.

6.3.7.1 Route photographic processing wastewater to the sanitary sewer, if a metals recovery system is put in place with EED approval.

6.3.7.2 EED shall conduct quarterly sampling of the metals recovery system to verify that levels of heavy metals are below detection or within the regulatory limits (Resource Conservation and Recovery Act [RCRA] and SID/NPDES).

6.3.7.3 Reroute to the IWTF or collect in accumulation containers if heavy metals concentrations exceed regulatory limits.

6.3.8 Deionized (DI) Regeneration Wastewater.

6.3.8.1 Treat DI regeneration wastewater generally to an acceptable pH level (a pH of 6 to 9) prior to discharge to the sanitary sewer.

6.3.8.2 Route DI regeneration wastewater to the IWTF if pH levels are unacceptable for discharge to the sanitary sewer (pH less than 6 or greater than 9).

6.3.9 Washracks and Vehicle Washing

6.3.9.1 Route discharges from washracks and vehicle washwater to the sanitary sewer. EED shall evaluate the need for an OWS for washwater discharges to the sanitary sewer.

6.3.9.2 Route discharges from washracks and vehicle washwater to the storm sewer with EED approval. Discharge to the storm sewer requires an NPDES permit modification and installation of an oil/water separator (OWS).

6.3.10 Petroleum Product Aboveground Storage Tank (AST) Dike Drainage

6.3.10.1 If a sheen is visible on the surface of water collected within a dike of a petroleum AST, route the dike drainage via vacuum truck to the Redstone Arsenal oil/water separator, or pump into barrels and dispose of in an approved manner.

6.3.10.2 MSFC user organizations must locate and correct the source of contamination for any visible sheen in a diked AST area.

6.3.10.3 If no sheen is present on the surface of water collected within a dike of a petroleum AST, discharge the dike drainage to the storm sewer or the sanitary sewer.

6.3.11 Petroleum Product Underground Storage Tank (UST) Pit Drainage

6.3.11.1 If a sheen is visible on the surface of water collected within a UST pit, route the dike drainage via vacuum truck to the Redstone Arsenal oil/water separator, or pump into barrels and dispose of in an approved manner.

6.3.11.2 MSFC user organizations must locate and correct the source of contamination for any visible sheen in a UST pit area.

6.3.11.3 If no sheen is present on the surface of water collected within a UST pit, discharge the dike drainage to the storm sewer.

6.3.12 Hazardous Material ASTs and USTs Drainage.

Contact EED for appropriate discharge handling methods for non-petroleum ASTs and USTs.

6.3.13 Well Purge Water.

6.3.13.1 Collect and manage in accordance with MWI 8550.1, "Waste Management". Sample drums of well purge water prior to disposal to verify whether RCRA limits are met.

6.3.13.2 If well purge water does not exceed RCRA criteria, discharge water to the IWTF or Groundwater Treatment Facility.

6.3.13.3 If well purge water exceeds RCRA criteria, dispose of the purge water as hazardous waste.

6.3.13.4 EED shall support MSFC user organizations in the hazardous waste characterization and disposal.

6.3.14 Remediated Groundwater.

6.3.14.1 Notify EED prior to discharging remediated groundwater.

6.3.14.2 Discharge remediated groundwater directly to the storm water drainage system.

6.3.14.3 EED shall modify the NPDES permit as needed for remediated groundwater discharges.

6.3.15 Sanitary Sewer Overflows.

6.3.15.1 MSFC user organizations must notify EED when sanitary sewer overflows are discovered. Sanitary sewer overflows indicate a collection system that is inadequate or in need of repair. Overflows from the sanitary sewer should not occur except under extraordinary circumstances.

6.3.15.2 Redstone Arsenal shall address sanitary sewer overflows on MSFC. Overflow pipes from sanitary sewer lift stations or manholes that connect to the storm sewer system should be removed, and necessary improvements should be made to the sanitary sewer collection system.

6.3.16 Oil/Water Separators.

6.3.16.1 Route discharges from OWSs to the sanitary sewer.

6.3.16.2 Prevent or minimize non-contaminated storm water runoff to the OWS.

6.3.16.3 Route OWS discharges to the storm sewer with prior EED approval if permitted and monitored per NPDES permit requirements. However, disposal to the sanitary sewer is the most economical and environmentally sound option.

6.3.17 Engine Test Quench Water.

6.3.17.1 Impound and test quench water for compliance with RCRA and ADEM impoundment limits and NPDES effluent limits.

6.3.17.2 Discharge engine test quench water to permitted storm water outfalls if NPDES effluent limits are met.

6.3.17.3 Notify EED if RCRA, ADEM or NPDES limits are exceeded.

6.3.18 Fire Water

Discharge water used to extinguish fires to the storm sewer unless contaminated with oil or chemicals (if contaminated, collect the discharge water and contact EED for proper disposal).

Table 1
Discharge Routing Table
NASA MSFC

Discharge Type	Allowable Routing		Potential Alternative Routing with EED Written Approval[1]	
	Receiving System	Permit Modification Required?	Receiving System	Permit Modification Required?
Cooling Tower Blowdown	Sanitary	No	Storm	NPDES
Boiler Blowdown	Sanitary	No	Storm	-
Once-through Non-contact	Storm	NPDES	Sanitary	No
Laboratory Sinks	Sanitary	No	IWTF	SID
Floor Drains	Sanitary	No	IWTF	SID
Photographic Processing	Sanitary[2]	No	IWTF	SID
DI Regeneration Wastewater	IWTF	SID	Sanitary[3]	No
Washracks and Vehicle Washing	Sanitary	No	Storm[4]	NPDES
Aboveground/Underground Storage Tank Dike Drainage				
Petroleum Products				
Uncontaminated	Storm	No	Sanitary	No
Contaminated	Army OWS[5]	No	IWTF	SID
Non-Petroleum Products	Contact EED	-	None	-
Well Purge Water				
RCRA	Contact EED – haz waste	-	None	-
Non RCRA	IWTF/GWTF	SID	Sanitary	No
Remediated Groundwater	Storm - Contact EED	SID or NPDES	None	-
Sanitary Sewer Overflows	Sanitary[6]	No	None	-
Oil/Water Separators	Sanitary	No	Storm	-
Engine Test Quench Water	Storm	NPDES	None	-

Fire Water	Storm	NPDES	None	-

Notes:
Sanitary Sewer: Use National Categorical Pretreatment Standards for guidance. Sanitary Sewer overflows are not allowed under current regulations.
Storm Sewer: Non-storm water discharges must be permitted (Form 2C or 2D).

[1]Deviations to "Allowable Discharge Routing" requires that a memo must be written to EED stating justifications for alternative discharge routing
[2]Allowable if a recovery system for metals is put in place and heavy metal levels are verified quarterly by the EED.
[3]If pH is adjusted to acceptable levels.
[4]Must install an oil/water separator and be permitted under NPDES.
[5]This refers to extraction by Redstone the Arsenal vacuum truck for delivery to the Redstone Arsenal oil/water separator.
[6]Contact EED so that they can inform the Army to repair.

7. NOTES

The discharge criteria for each potential disposal destination are presented below. The EED should be consulted for those discharges that do not meet the criteria for the preferred or allowable disposal options.

7.1. Sanitary Sewer. Redstone Arsenal does not have formalized pretreatment requirements. Potential dischargers should consult 40 CFR 401 to 471 to obtain guidance about discharge limits applicable to their discharge. Under current practices, each new connection to the sanitary sewer for a source other than domestic sewage must be approved by EED and Redstone Arsenal (or the wastewater treatment plant contractor owner/operator).

7.2 Industrial Wastewater Treatment Facility. This facility was designed primarily to provide pretreatment for plating shop wastewaters. The IWTF treats the plating shop wastes to a level acceptable for discharge into the sanitary sewer. Discharges similar in character to the plating shop wastes can be routed to the IWTF. However, the IWTF has no means to treat water that contains volatile organic compounds (VOCs) or oil and grease. The EED must approve any discharge planned for routing to the IWTF.

7.3 Storm Sewer. The MSFC current NPDES permit places no specific discharge limitations on storm water. However, the permit does call for visual inspections to check for sheen on storm water discharges. Although no guidance is provided in the current NPDES permit, the following criteria are common for discharge to surface waters and can be applied as guidelines for storm water discharges:

- Oil and grease (O&G): 15 milligrams per liter (mg/L)
- Total suspended solids (TSS): 30 mg/L

- pH: 6.5 to 8.5

7.4 Industrial Sewer. Connections to the old industrial sewer are not allowed. This sewer system will be abandoned once the existing connections have been removed and rerouted to the sanitary sewer or storm sewer as appropriate.

8. SAFETY PRECAUTIONS AND WARNING NOTES

Regulations forbid discharging flammable or explosive materials or regulated hazardous waste into wastewater collection systems.

9. RECORDS

9.1 SID Permit Number IU 08 45 00027. Permit is maintained by both ADEM and EED. Permit is re-issued every 5 years.

9.2 NPDES Permit Number AL0000221. Permit is maintained by both ADEM and EED. Permit is re-issued every 5 years.

9.3 NPDES and SID inspection records are maintained by EED for 3 years, then destroyed.

10. PERSONNEL TRAINING AND CERTIFICATION

None

11. FLOW DIAGRAMS

Figure 1 is the flow diagram for sewer discharge guidance described in Section 6.3. Figure 2 is a flowchart of general SID permit compliance activities.

12. CANCELLATION

None

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Figure 1
NASA MSFC Discharge Routing Flowchart

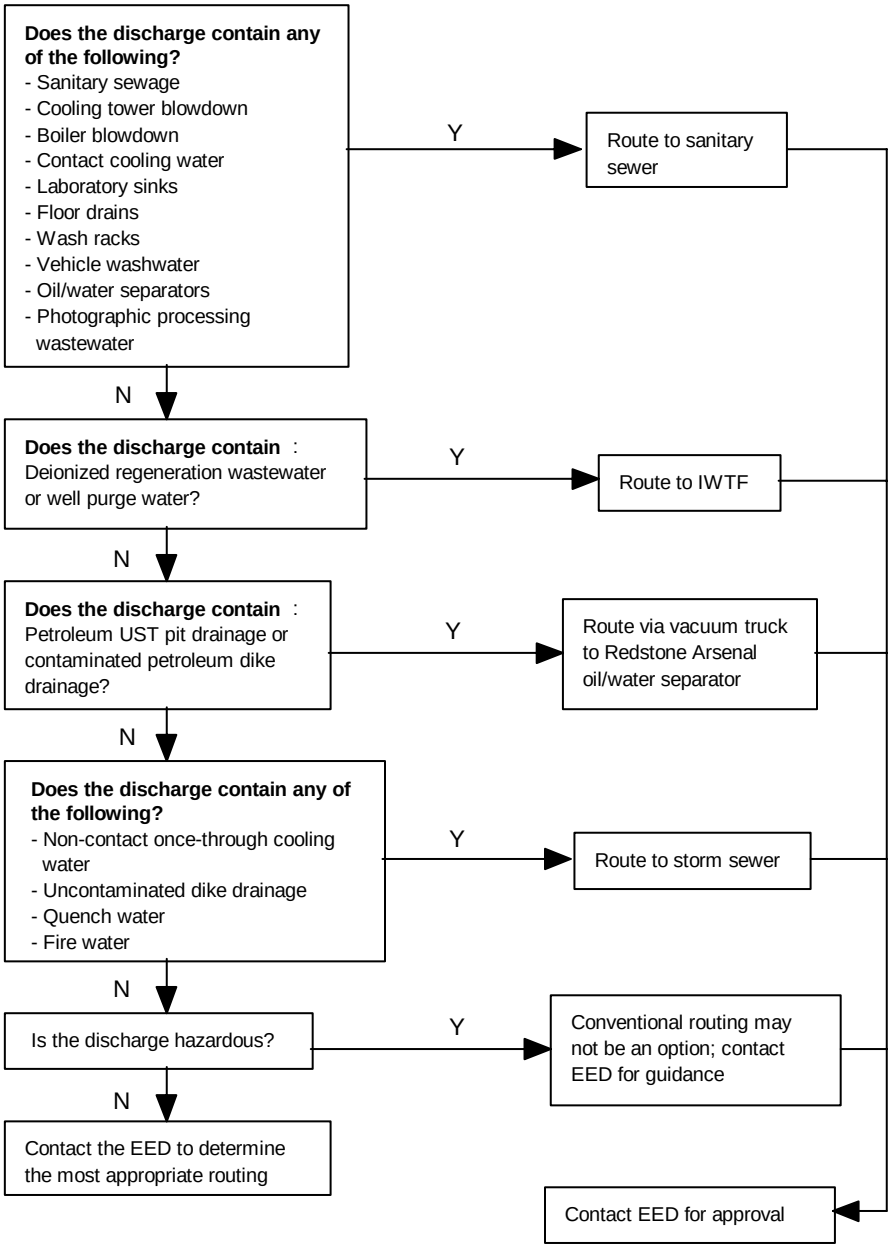

Figure 2
Flowchart for Compliance with SID Permit